Arctic Marine Conservation

Hal Mills

Marine Policy Consultant, Halifax, N.S.
Published by:
Ocean Science and Surveys, Atlantic
Department of Fisheries and Oceans

Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, Nova Scotia B2Y 4A2

January 1984

Canadian Technical Report of Fisheries and Aquatic Sciences No. 1242

Canadian Technical Report of Fisheries and Aquatic Sciences

These reports contain scientific and technical information that represents an important contribution to existing knowledge but which for some reason may not be appropriate for primary scientific (i.e. *Journal*) publication. Technical Reports are directed primarily towards a worldwide audience and have an international distribution. No restriction is placed on subject matter and the series reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Technical Reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report will be abstracted in *Aquatic Sciences and Fisheries Abstracts* and will be indexed annually in the Department's index to scientific and technical publications.

Numbers 1-456 in this series were issued as Technical Reports of the Fisheries Research Board of Canada. Numbers 457-714 were issued as Department of the Environment, Fisheries and Marine Service, Research and Development Directorate Technical Reports. Numbers 715-924 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Technical Reports. The current series name was changed with report number 925.

Details on the availability of Technical Reports in hard copy may be obtained from the issuing establishment indicated on the front cover.

Rapport technique canadien des sciences halieutiques et aquatiques

Ces rapports contiennent des renseignements scientifiques et techniques qui constituent une contribution importante aux connaissances actuelles mais qui, pour une raison ou pour une autre, ne semblent pas appropriés pour la publication dans un journal scientifique. Il n'y a aucune restriction quant au sujet, de fait, la série reflète la vaste gamme des intérêts et des politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les Rapports techniques peuvent être considérés comme des publications complètes. Le titre exact paraîtra au haut du résumé de chaque rapport, qui sera publié dans la revue *Aquatic Sciences and Fisheries Abstracts* et qui figurera dans l'index annuel des publications scientifiques et techniques du Ministère.

Les numéros 1-456 de cette série ont été publiés à titre de Rapports techniques de l'Office des recherches sur les pêcheries du Canada. Les numéros 457-714, à titre de Rapports techniques de la Direction générale de la recherche et du développement, Service des pêches et de la mer, ministère de l'Environnement. Les numéros 715-924 ont été publiés à titre de Rapports techniques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 925.

La page couverture porte le nom de l'établissement auteur où l'on peut se procurer les rapports sous couverture cartonnée.

Canadian Technical Report of

Fisheries and Aquatic Sciences 1242

January 1984

ARCTIC MARINE CONSERVATION

A DISCUSSION PAPER ON RESPONSIBILITIES AND OPPORTUNITIES

FOR THE DEPARTMENT OF FISHERIES AND OCEANS

SUBMITTED IN ACCORDANCE WITH DSS CONTRACT FP806-1-A012

by

HAL MILLS

Marine Policy Consultant, Halifax, N.S.

Published by:

Ocean Science and Surveys, Atlantic
Department of Fisheries and Oceans

Bedford Institute of Oceanography
P.O. Box 1006
Dartmouth, Nova Scotia
B2Y 4A2

© Minister of Supply and Services Canada 1984

Cat. No. Fs 97-6/1242E ISSN 0706-6457

Correct citation for this publication:

Mills, H. 1984. Arctic marine conservation. Can. Tech. Rep. Fish. Aquat. Sci. 1242: 61 pp.

ABSTRACT

Mills, H. 1984. Arctic marine conservation. Can. Tech. Rep. Fish. Aquat. Sci. 1242: 61 p.

This discussion paper provides an overview of the present status of Arctic marine conservation in Canada. It focuses on marine conservation issues emanating from the major non-renewable resource development and related transportation projects being planned for the North. It examines the responsibilities of the Department of Fisheries and Oceans regarding the conservation issues, and offers opinions on the various opportunities that exist for discharging these. It is noted that Canada's admirable record as an environmental nation, with a particular conscience for the Arctic marine environment, may be at stake since, despite this record, some nations believe that Canada has always been more interested in Arctic sovereignty than the environment; they question Canada's resolve to protect the environment given the pace and scale of development projects being planned for the Arctic today. Arctic marine conservation issues are addressed within the context of major projects stimulated by the National Energy Program, and Inuit land claims negotiations. The policy vacuum that exists north of 60°N is cited as a key problem in coming to grips with these issues. The mandate of DFO, and its responsibilities for Arctic marine conservation, are reviewed. Possible opportunities for implementing conservation objectives are examined. The author concludes that DFO should abandon its reactive approach to conservation issues in favour of a proactive role - where it assumes the lead agency role with respect to marine conservation issues to ensure that Canada's commitments emanating from the Law of the Sea Treaty and the World Conservation Strategy are

implemented. The author advances several recommendations for consideration by DFO.

RÉSUMÉ

Mills, H.. 1984. Arctic marine conservation. Can. Tech. Rep. Fish. Aquat. Sci. 1242: 61 p.

Dans ce document de travail, l'auteur passe en revue l'état actuel de la conservation marine dans l'Arctique canadien. Il traite plus particulièrement des problèmes de conservation marine soulevés par le développement de l'exploitation des ressources non renouvelables et par les projets de transports qui en découlent et qui sont présentement à l'étude dans le Nord. Il examine les responsabilités du ministère des Pêches et des Océans à l'égard des questions de conservation et propose des suggestions au sujet des diverses façons d'assumer ces responsabilités. Il souligne dans ce document que la réputation du Canada en tant que nation soucieuse de l'environnement, et particulièrement de l'environnement marin arctique, peut être en jeu puisque, malgré les réalisations, certains pays croient que le Canada s'est toujours intéressé davantage à sa souveraineté sur l'Arctique qu'à l'environnement. Ces pays mettent en doute la volonté du Canada de protéger l'environnement, au vu du rythme et de l'extension des projets de développement dans l'Arctique actuellement à l'étude. Il étudie les problèmes de conservation marine dans l'Arctique dans le contexte des grands projets suscités par le Programme énergétique national et dans le cadre des négociations auxquelles donnent lieu les revendications territoriales des Inuit. Il définit le problème principal qui empêche la résolution de toutes ces questions comme étant l'absence de

tout ce qui concerne le Nord de la latitude 60°N. L'auteur examine le mandat du ministère des Pêches et des Océans et ses responsabilités en matière de conservation marine arctique, et il étudie les possibilités de mise en oeuvre des objectifs de conservation. Il en vient à la conclusion que le Ministère devrait changer son approche, et qu'au lieu d'agir par réaction en matière de conservation, il devrait adopter un rôle beaucoup plus actif et agir en tant qu'organisme directeur afin d'assurer la mise en oeuvre des engagements du Canada dans le cadre du Traité sur le droit de la mer et de la Stratégie mondiale de conservation. L'auteur soumet enfin plusieurs recommendations à l'attention du Ministère.

TABLE OF CONTENTS

	Page
PREFACE	1
EXECUTIVE SUMMARY	2
CHAPTER 1. INTRODUCTION	5
CHAPTER 2. ARCTIC MARINE CONSERVATION: LEGAL CONSIDERATIONS.	7
2.1 The International Setting	7
2.2 Domestic Legislation and Regulation	10
2.3 DFO Responsibilities	16
CHAPTER 3. ARCTIC MARINE CONSERVATION ISSUES	20
3.1 Introduction	20
3.2 Resource Development Conservation Issues	22
3.3 Transportation Conservation Issues	24
3.4 The Policy Vacuum	26
3.5 Marine Habitat Protection	28
3.6 Renewable Resource Harvesting	31
CHAPTER 4. NORTHERN PLANNING AND CONSERVATION INITIATIVES	37
4.1 Introduction	37
4.2 Northern Land Use Planning	37
4.3 A Comprehensive Conservation Strategy	39
4.4 Lancaster Sound Regional Study	43
CHAPTER 5. DFO RESPONSIBILITIES AND OPPORTUNITIES	46
5.1 DFO Priority Area Requirements	46
5.2 Planning Responsibilities	48
5.3 Summary and Recommendations	51
FOOTNOTES	55

PREFACE

This report was prepared for the Department of Fisheries and Oceans (DFO) as one of the outputs from a contract with Hal Mills, a marine policy consultant based in Halifax, for services in connection with the Department's involvement in the Lancaster Sound Regional Study. Specifically the contract (Department of Supply and Services No. FP806-1-A012) called for the development and analysis of marine use options in the Lancaster Sound Region for the period 1980-2000. One of the major considerations in the development of such options is conservation. Because of the importance of this subject viz-à-viz the mandate and role of the Department, it was decided to utilize the information and understanding acquired through the work on Lancaster Sound in the preparation of a discussion paper pertaining to the Arctic as a whole. The report was drafted by Hal Mills, submitted for review to members of the Department's Arctic Offshore Developments Committee (ARCOD) and other specialists, and finally accepted by ARCOD. It should not be construed that the report represents Departmental policy; rather it is a contribution towards the development of such policy. ARCOD thanks Hal Mills for his work, and is confident that the report will be useful to DFO and other organizations in the formulation of policies regarding Arctic marine conservation.

H.B. Nicholls

Scientific Authority

Ocean Science and Surveys, Atlantic

EXECUTIVE SUMMARY

The discussion paper provides an overview of the present status of Arctic marine conservation in Canada. It focuses on marine conservation issues emanating from the major non-renewable resource development and related transportation projects being planned for the North. It examines the responsibilities of the Department of Fisheries and Oceans regarding the conservation issues, and offers opinions on the various opportunities which exist for discharging these. For purposes of the discussion paper conservation is defined as:

> "the preservation, protection, maintenance, enhancement, and sustainable utilization of natural resources and the environment."

Canada's admirable record as an environmental nation, with a particular conscience for the Arctic marine environment, may be at stake. This record includes: the controversial passage of the Arctic Waters Pollution Prevention Act in 1970; the adoption of the principles and action plan of the 1972 United Nations Conference on the Human Environment; the adoption of the 1980 World Conservation Strategy; and the drafting of, and successful lobbying for, Article 234 - the ice-covered areas provisions of the recently signed Law of the Sea Treaty. Despite this record, some nations believe that Canada has always been more interested in Arctic sovereignty than the environment, and they question Canada's resolve to protect the environment given the pace and scale of development projects being planned for the Arctic today.

Arctic marine conservation issues are addressed within the context of major projects stimulated by the National Energy Program, and Inuit land claims negotiations. Conservation issues are categorized as those relating

to non-renewable resource development projects, and to transportation. At a broad conceptual level these include:

- environmental impact of hydro projects
- deleterious deposits from mining projects
- oil under the ice
- pollution of polynyas and shore leads
- protection of environmentally significant areas
- hydrocarbon facilities siting
- artificial islands, dredging, quarrying
- cumulative impacts on renewable resources
- risk of tanker accidents
- route selection
- impact of noise on marine mammals
- impact of ships tracks on the Inuit
- direct collisions with denning seals
- marine mammals in leads and polynyas
- international conservation issues.

The policy vacuum that exists North of 60° is cited as a key problem in coming to grips with these issues. The policies which exist for the North (such as the 1972 policy statement Canada's North 1970-1980, the 1976 Energy Strategy for Canada, and the 1980 National Energy Program) amount to little more than a "balancing act" policy regarding people, resources and the environment. Unfortunately this provides little sense of direction or priority when considering conservation issues. To make matters worse, DIAND, DOE and DFO have a confusing overlap in their general mandates, and there is no clear answer to the question: which department has the mandate to coordinate federal policies and programs for the Arctic

marine environment?

The mandate of DFO, and its responsibilities for Arctic marine conservation, are reviewed. Possible opportunities for implementing conservation objectives through other initiatives such as Northern Land Use Planning, the Comprehensive Conservation Policy and Strategy, and the Lancaster Sound Regional Study also are examined. The author's conclusion however, is that DFO should neither rely on these initiatives nor sit back waiting for them to occur. What DFO should do is abandon its reactive approach to conservation issues in favour of a proactive role -- where it assumes the lead agency role with respect to marine conservation issues to ensure that Canada's commitments emanating from the Law of the Sea Treaty and the World Conservation Strategy are implemented. In conclusion, the following recommendations are advanced for consideration by DFO:

1. It is recommended that DFO propose the establishment of an Arctic Marine Policy Council;

2. It is recommended that DFO assume the lead role in developing a comprehensive Arctic marine conservation policy and strategy;

3. It is recommended that DFO identify, and take necessary steps to protect, important marine environmentally sensitive areas;

4. It is recommended that DFO support the establishment of an Inuit Marine Affairs Council; and

5. It is recommended that DFO initiate a program for Inuit marine mammal management.

CHAPTER 1

INTRODUCTION

This discussion paper is intended as an overview of the status of Arctic marine conservation in Canada, at a time when the planning and development of major non-renewable resource development and related transportation projects is being considered for the North. The paper focuses on the Arctic marine conservation issues created by these projects including impacts on the environment and the Inuit, the responsibilities of Canada and the Department of Fisheries and Oceans (DFO) regarding the conservations issues, and the various opportunities which exist for discharging these responsibilities. For purposes of this paper conservation is defined as:

> the preservation, protection, maintenance, enhancement, and sustainable utilization of natural resources and the environment.

Chapter 2 of the discussion paper is an extensive review of legal and administrative considerations for Arctic marine conservation, starting with international obligations from the Law of the Sea Treaty, the World Conservation Strategy, and international treaties to which Canada is signatory. It goes on to discuss domestic legislation regarding the Arctic marine environment and the regulatory roles of the various federal departments, and concludes with a summary of DFO responsibilities and program objectives.

Chapter 3 addresses the Arctic marine conservation issues within the context of major projects stimulated by the National Energy Program and Inuit land claims negotiations. Conservation issues are categorized as those relating to resource development and to transportation. The current

northern policy vacuum is discussed in terms of the complications it presents for advancing conservation and habitat protection strategies, before reviewing measures required to protect important Arctic marine habitats. Finally, renewable resource harvesting by the Inuit, which may be the most controversial issue facing DFO, is assessed.

Chapter 4 looks at several northern planning and conservation initiatives which may present DFO with opportunities for implementing its marine conservation objectives more effectively. DIAND's new Northern Land Use Planning program, its promise and its pitfalls, is addressed. The need for a comprehensive conservation strategy and DIAND's draft discussion paper on a Comprehensive Conservation Policy and Strategy for the Northwest Territories and Yukon is discussed in terms of implications for environmentally significant marine areas. The Lancaster Sound Regional Study is reviewed as a case study of how resource use issues can be assessed and marine conservation strategies can be applied.

Chapter 5 wraps up the discussion paper with an examination of DFO responsibilities and opportunities for Arctic marine conservation. It summarizes departmental priority area requirements and planning responsibilities, before concluding with a set of recommendations aimed at taking a proactive, rather than reactive, role to implement Arctic marine conservation policies and objectives. The recommendations are those of the author of the discussion paper for consideration by the Department of Fisheries and Oceans.

CHAPTER 2

ARCTIC MARINE CONSERVATION: LEGAL CONSIDERATIONS*

2.1 The International Setting

As a general rule the international legal community encourages States to be as environmentally conscious as possible, provided that action taken by one State does not unduly interfere with the interests of other States. Concern over interference usually is expressed by maritime shipping states when the marine pollution regulations of coastal states threatens interference with shipping activities. The international community therefore tends to discourage States from unilaterally proclaiming regulations over vessel source marine pollution.

The United Nations Draft Convention on the Law of the Sea (hereinafter referred to as the Law of the Sea Treaty), which now has been signed and is awaiting ratification before coming into force, establishes a new regime for vessel source pollution.[1] The restrictions placed upon a coastal State have one important exception: a separate regime is permitted in ice-covered areas under Article 234.

> "Coastal states have the right to adopt and enforce non-discriminatory laws and regulations for the prevention, reduction and control of marine pollution from ice-covered areas within the limits of the zone, where particularly severe climatic conditions and the presence of ice covering such areas for most of the year create obstructions or exceptional

---

*The assistance of Ted McDorman in the preparation of this chapter is gratefully acknowledged.

hazards to navigation, and pollution of the marine environment could cause major harm to or irreversible disturbance of the ecological balance. Such laws and regulations shall have due regard to navigation and the protection and preservation of the marine environment based on the best available scientific evidence."

This recognized right of a State to unilaterally enact and enforce regulations regarding vessel source marine pollution in ice-covered areas is a triumph of Canadian diplomacy. Canada drafted and lobbied for Article 234, although perhaps not entirely for environmental reasons, in order to legitimize the 1970 Arctic Waters Pollution Prevention Act which had been passed primarily as a means of asserting sovereignty over Arctic waters.[2]

A state also has obligations to the international community that arise in three ways: through customary international law; through becoming party to an international treaty; and through agreeing to be bound by a declaration of principles. Examples of the latter are Canada's agreements to adopt the declaration of principles and action plan of the 1972 United Nations Conference on the Environment, and to adopt the 1980 World Conservation Strategy. While these are not binding in a strictly legal sense, they do impose moral obligations to follow the general intent of the declarations, and eventually they may become customary international law.

Significant and legally binding obligations will arise from the environmental provisions of the Law of the Sea Treaty. These obligations can be categorized into six different components:

i) law creation and enforcement;

ii) participation in global and regional organizations and

conventions;

iii) conduct of scientific research and studies;

iv) development of contingency plans for marine environmental pollution;

v) monitoring and environmental assessment of activities; and

vi) technical assistance to developing countries.

For Canada these newly created obligations need not be very onerous since the currently existing legislation and institutional arrangements are sufficient to meet the letter of the requirements in the Law of the Sea Treaty[3]. However, as perhaps the leading environmental nation during the negotiations Canada may choose to interpret its obligations more broadly in accordance with the spirit of the Treaty. Obligations are created with respect to: land-based sources of pollution; pollution from continental shelf activities; dumping; vessel-source pollution; monitoring; and environmental assessment. All of these obligations may be of particular importance in the Arctic. One provision of the Law of the Sea Treaty that should be singled out for attention is 194(5) which is the only section to deal directly with fish habitat and fragile ecosystems:

> "The measures taken in accordance with this part shall include those necessary to protect and preserve rare or fragile ecosystems as well as the habitat of depleted, threatened or endangered species and other forms of marine life."

While the obligations from the Law of the Sea Treaty are not yet binding upon Canada, Canada is a party to several other treaties that relate to the marine environment, particularly the London Dumping Convention. These conventions deal primarily with vessel source pollution

and will not be applicable in the Canadian Arctic because of Canada's ability to set its own standards in accordance with Article 234 of the Law of the Sea Treaty.

There are several other treaties that impact either directly or indirectly upon the arctic marine environment: the Convention on International Trade in Endangered Species; the Agreement on the Conservation of Polar Bears; the Convention on Wetlands of International Importance Especially as Waterfowl Habitat; and the Convention on the Conservation of Migratory Species of Wild Animals. Canada is a party to the first three, but has not yet become a party to the last of the conventions and is not bound by it.

There are a number of non-governmental organizations that seek to influence the tide of international events. Particular mention should be made of the International Union for the Conservation of Nature and Natural Resources (IUCN) which recently produced a massive study on The Environmental Law of the Sea[4] containing numerous recommendations for action relating to the marine environment. These include recommendations on: the protection of habitats; the preservation of rare and endangered species; ice-covered areas; and environmental impact assessment. Another project of IUCN is the World Conservation Strategy[5] which provides a list of objectives for conservation and sets priorities for national and international actions. Canada has officially adopted the World Conservation Strategy and now has obligations to implement it in Canada.

2.2 Domestic Legislation and Regulation

Five different departments of the federal government are involved in protection of the marine environment in the Canadian Arctic: the

Department of the Environment (DOE); the Department of Energy, Mines and Resources (EMR); the Department of Indian Affairs and Northern Development (DIAND); the Department of Transport (DOT); and the Department of Fisheries and Oceans (DFO). To a greater or lesser extent their involvement depends upon their responsibilities with respect to potential threats to the arctic marine environment arising from the following activities[6]:

i) transportation and ice-breaking;

ii) marine operations such as research, defence, dumping;

iii) energy exploration and exploitation mainly from offshore oil and gas drilling and production; and

iv) land-based pollution from mining, ports, communities.

Attention has been concentrated upon Arctic shipping and offshore drilling activities, plus a few specific mining operations, as the current amount of marine environmental degradation from other marine activities and land-based sources is not substantial. There has been a recognition within the Federal government of the importance of the conservation of the natural environment in the Arctic.

DIAND's mandate gives that Department jurisdiction over the resources of the Yukon Territory and the Northwest Territories, and a responsibility for economic development and native affairs. While not specifically so stated in its legislative mandate, DIAND acts as the co-ordinator of federal policies and programs in the North.

EMR's mandate gives it jurisdiction over energy, mines, minerals and other non-renewable resources. This mandate has recently been strengthened with respect to oil and gas resources of the arctic frontier through Bill C-48 and the Canada Oil and Gas Lands Administration (COGLA).

DOT's mandate includes shipping and the Coast Guard, and is under-

lined by the recent establishment of a Coast Guard northern region. The shipping mandate is not spelled out in the Department of Transport Act except to say that the department retains the jurisdiction that had existed in 1936 in the Department of Marine, which included shipping matters.

DOE's mandate includes: the preservation and enhancement of the quality of the natural environment; renewable resources; water; and meteorology. The department is responsible for the co-ordination of the policies and programs of the Government of Canada respecting the preservation and enhancement of the quality of the environment, a responsibility that presumably includes the arctic marine environment. The mandate includes the promotion of environmentally sound practices, the establishment of environmental standards, and the responsibility to ensure that projects initiated by federal departments or involving federal funds/lands are assessed for their environmental impacts. By order-in-council DOE may establish environmental guidelines for other departments and agencies.

DFO's general mandate prescribed in the 1979 Government Organization Act includes: sea coast and inland fisheries; fishing and recreational harbours; hydrography and marine sciences; and the co-ordination of the policies and programs of the Government of Canada respecting oceans. The specific responsibilities of DFO with respect to arctic marine conservation will be covered in a later section.

At this point it is necessary to point out an apparent overlap in the general mandates of three of the above departments. DIAND acts as the co-ordinator of federal policies and programs in the North. DOE acts as the co-ordinator of federl policies and programs for the preservation and enhancement of the quality of the environment. DFO acts as the co-ordinator of federal programs for oceans. Although the mandates for DIAND and

DOE do not specifically refer to oceans, and the DFO mandate does, there is no clear answer to the question: Which department has the mandate to coordinate federal policies and programs for the arctic marine environment?

The major piece of environmental legislation relating to Arctic waters is the 1970 Arctic Waters Pollution Prevention Act (AWPPA). The responsibility for this Act primarily is shared by DOT and DIAND. DOT is responsible for the provisions relating to vessels and DIAND for those provisions regarding land-based facilities, while EMR also has some limited responsibilities under this Act. It establishes a 100 NM wide zone above 60° North where vessels are only permitted to enter if they meet specifications regarding vessel construction, manning, design, navigational aids, and cargo controls. Further, the vessel owners have to show evidence of financial responsibility. The Canadian Coast Guard has established a vessel traffic management scheme to monitor and control vessel traffic in the north. AWPPA also provides that, in some instances, works being undertaken in the Arctic or in Arctic waters must be assessed for their environmental impacts. The Act allows for the issuance of environmental operating conditions containing provisions for monitoring and evaluation.[7]

Bill C-48, the new Canada Oil and Gas Act, substantially replaces and amends the Oil and Gas Production and Conservation Act. EMR and DIAND share responsibility for this Act which is designed to govern all hydrocarbon resource development in the Arctic and the offshore. The Act contains several significant marine environment features: the creation of two environmental studies revolving funds, one administered by EMR (south of 60) and the other administered by DIAND (north of 60) and a provision that the Minister may suspend an offending activity where an acute ecological problem exists. The amended Oil and Gas Production Act requires those

involved in exploration and production to undertake environmental studies, carry out significant environmental programs, evidence financial responsibility, develop appropriate oil spill contingency plans, and provide compensation for oilspill cleanups.

The Territorial Lands Act is administered by DIAND and provides for the administration of lands in the Yukon and Northwest Territories. The Act allows for the establishment of land management zones and permits DIAND to regulate land uses and their environmental pollution aspects. The Public Land Grants Act is used by DIAND in its regulation of artificial islands in the Beaufort Sea. DIAND also is responsible for the Northern Inland Waters Act which is used to conserve, develop and utilize freshwater resources. Water Boards have been established in the Yukon Territory and the Northwest Territories to issue licences, monitor water uses, and maintain the environment.

DOT has jurisdiction under the Canada Shipping Act and the Navigable Waters Protection Act regarding potential impacts on the arctic marine environment. Part XX of the Canada Shipping Act creates a vessel source pollution regime that applies to waters not covered by AWPPA.[8] The Navigable Waters Protection Act gives DOT decision-making authority over proposed works that are to be built or placed in navigable waters, including arctic waters.

DOE has authority that may extend to the Arctic and to marine environmental protection under a series of acts: the Environmental Contaminants Act; the Ocean Dumping Control Act; the Clean Air Act; the Canada Water Act; the National Parks Act; the Migratory Birds Convention Act; and the Canada Wildlife Act. Under the latter two acts DOE has the authority to take action to protect endangered species and to prevent pollution from

harming protected species. The series of acts has a wide potential for consideration in land use and environmental hearings in the North.[9]

The final act to be discussed is the Fisheries Act which is, first and foremost, a resource management tool. The Act has been described as "a water pollution standards statute",[10] and is viewed as "a comprehensive attempt to preserve fish and their habitat".[11] Both DOE and DFO have responsibilities under this Act in relation to protecting fish habitat, and DFO is responsible for fish resource management. However, the Minister of Fisheries ultimately has complete responsibility for the act. Regulations and fines exist for "harmful alteration, disruption or destruction of fish habitat" and for damage caused to fishing grounds. The Act has wide application and can be enforced wherever fish, including marine mammals, exist. It is obvious that this Act can be of importance in protecting the arctic marine environment. Sections 30, 31.(1), 33.(2) and 44 all are relevant to Arctic marine conservation.

The Fisheries Act, section 33.1(1) states that where a work or undertaking is about to be constructed or has been constructed, and the activity will or is likely to result in the deposit of deleterious substances (as defined in the Act) in waters frequented by fish, the Minister of Fisheries may require those involved in the undertaking to supply specifications and information for assessment and review before proceeding. Similar requirements may be imposed by DIAND under AWPPA and by DOT under the Navigable Waters Protection Act.

Supplementing and elaborating the review process under the Navigable Waters Protection Act is the Code of Recommended Standards for the Prevention of Pollution in Marine Terminal Systems (TERMPOL Code), which is a voluntary interdepartmental assessment tool aimed at preventing

pollution where port, marine facilities, or new vessels are proposed for the Arctic. It has a broad application and is of value to all departments with environmental interests in the Arctic.

The National Energy Board (NEB) is required to hold hearings where the export or interprovincial trade of energy resources is involved. Beyond this regulatory function, which may or may not permit the NEB to look at environmental matters, the Minister of EMR can request the NEB to study, review, report and make recommendations on any energy matter. As most Arctic development activities relate to energy resources, this gives wide powers to EMR.[12]

Trying to untangle the departmental juristictions over the arctic marine environment is not unlike trying to solve Rubic's cube blindfolded. The above synopsis gives the main statutes and the mandates of the key departments that have a role to play. The remaining element, which only partially cuts through the complex federal jurisdictional maze, is the Environmental Assessment and Review Process (EARP). The Federal Environment Assessment and Review Office (FEARO), appended to DOE and reporting to the Minister of Environment, is responsible for EARP. However, there is no statutory basis for EARP, and questions persist regarding the procedures to be followed, the authority of EARP panels, and the status of panel decisions/recommendations.

2.3 DFO Responsibilites

The responsibilities of DFO for arctic marine conservation can be divided into:

(a) those that are direct responsibilities arising from the DFO mandate or legislation; and

(b) those that are indirect responsibilities arising from the activities of other agencies, or interdepartmental groups with which DFO is involved.

More specifically, the departments northern responsibilities[13] are:

(a) to acquire oceanographic knowledge of Arctic waters and ecosystems, and to interpret and apply this knowledge towards the solution of problems arising from Arctic development;

(b) to ensure the adequacy of nautical charts and related publications necessary for the safe conduct of Arctic shipping;

(c) to provide Ocean Information Services;

(d) to protect fish and marine mammal resources and habitat from disruptive and destructive actions and to restore, develop and manage the habitat base so as to improve and maintain the capability of these populations to serve the needs of Northern residents;

(e) to understand the biology of important Arctic species and the functioning of Arctic aquatic ecosystems and to understand how man's uses affect them, in order that predictions of possible impacts can be made.

Direct DFO involvement in arctic marine conservation arises from the Fisheries Act which directs DFO to take the lead in renewable resource management and fish habitat protection. The department has developed programs to: preserve and protect fish stocks; evaluate the effects of industrial development on fish resources and habitats; monitor processing plants to ensure compliance with environmental standards; and research the ability of the northern ecosystem to respond to adverse impacts.[14] DFO has direct responsibilities for acquiring scientific information on the Arctic

and for ensuring the adequacy of nautical charts and related publications for the safe conduct of arctic shipping. It is part of the continuing mandate of DFO to monitor activities in the Arctic that may have a harmful effect on fish or fish habitats, and to acquire and distribute information relating to renewable resource management in the Arctic.

Indirectly, as the department with the general responsibility for oceans, and direct responsibility for marine renewable resource management, DFO has a role to play in all the environmental planning and review processes that take place in the Arctic, whether they be for hydrocarbon development, vessel traffic development, or land-use development. Interdepartmentally DFO plays a role in the Senior Policy Committee on Northern Resource Development Projects dealing with broad range policies relating to Arctic developments. Other important inderdepartmental committees where DFO has advisory and coordinating responsibilities are: the Interdepartmental Environmental Review Committee which provides program advice to DIAND; the Arctic Waters Advisory Committee dealing with the specification of environmental operating conditions for hydrocarbon drilling; the Resource Management Environmental Committee which provides advice to EMR on offshore drilling; and the Environmental Advisory Committee on Arctic Marine Transportation providing advice on proposed arctic shipping routes. DFO has played a major role in all EARP hearings in the Arctic and presently is discharging its direct and indirect responsibilities through a considerable volume of work relating to Beaufort Sea developments.

Other interdepartmental committees exist but the above-mentioned are the key ones through which DFO exercises its indirect responsibilities for the arctic marine environment, particularly as related to shipping and offshore developments. As well, land-use planning and land-based sources

of marine pollution in the arctic form a part of DFO's indirect responsibilities, but mechanisms for them are only now being developed. Internally, DFO has an Arctic Directors-General Committee, an Arctic Offshore Development Committee (ARCOD) and an Arctic Research Directors' Committee. ARCOD coordinates departmental responses on marine enviornmental and related socio-economic issues arising from Arctic offshore developments, and the Arctic Research Directors' Committee coordinates research activities in the north. Both committees provide advice to the Arctic Directors-General Committee, the senior DFO committee pertaining to Arctic matters.

CHAPTER 3

ARCTIC MARINE CONSERVATION ISSUES

3.1 Introduction

Arctic marine conservation issues tend to be closely linked with the major non-renewable resource projects that are being planned for the North. The Major Projects Task Force[1] in its report summarizing the mega projects which may be carried out in Canada over the period to the year 2000, identified $63.2 Billion in conventional hydrocarbon exploration and development projects for the Yukon and Northwest Territories (more than 80% of the total for Canada). Mining, pipelines and other projects added another $5.4 Billion to the northern projects identified by the Task Force. Although these are only projects which may be carried out, and it is highly unlikely that all of them will be, the location of such a high percentage of Canada's conventional hydrocarbon projects in the north leads to the conclusion that major hydrocarbon projects must be developed in the north to meet the objectives of the national energy program.

The conventional hydrocarbon projects in the vicinity of Arctic waters include: Beaufort Sea oil and gas where extensive reserves have been discovered both onshore and offshore and, depending on world oil prices and market conditions, production may be imminent; the Arctic Pilot Project (APP) which would deliver liquified natural gas from the Melville Island area to southern Canada or Europe; Sverdrup Basin oil and gas where substantial reserves have been discovered in the High Arctic and various schemes are being considered for production and marketing; Lancaster Sound where previous applications to drill for hydrocarbons in this environmentally sensitive area have been opposed and a "Green Paper" has been prepared addressing future use options; Baffin Bay where hydrocarbon

exploration is at an early stage and drilling has not yet commenced; Davis Strait where drilling has commenced and oil has been discovered; Hudson Bay where a single well was drilled years ago and where seismic exploration for hydrocarbons recently began; and the Labrador coast where extensive drilling has taken place and both oil and gas have been discovered. These are projects being planned and developed for the overall benefit of all Canadians, but the social and environmental impacts will be in the North, and will largely be borne by the Inuit and the Arctic marine environment.

It is no coincidence that this multitude of projects is being planned just at the time when comprehensive land claims negotiations are taking place and the creation of a Nunavut Territory is being considered through division of the existing Northwest Territories. The potential for oil and gas benefits has helped convince Ottawa to enter into comprehensive land claims negotiations to avoid future court challenges. Inuit participation in land claims' negotiations, the Berger Commission, N.E.B. Hearings on the Arctic Pilot Project, several EARP hearings, the Lancaster Sound Regional Study, negotiations on a proposed land-use planning program, and the Inuit Circumpolar Conference, - has greatly increased the political awareness of the Inuit people. In a very few short years the Inuit have developed the capability for dealing with the complex institutions and regulatory processes of Canada, while defining their own political and constitutional goals.

Comprehensive land claims negotiaitons and political development of the North form a backdrop for Arctic marine conservation issues, and there is a very good argument that such issues should be settled before proceeding with any major development projects. However, it is not at all clear what the sequence of events will be, and some of the conservation issues require immediate attention. For purposes of this discussion paper the

issues are categorized as resource development conservation issues, and as transportation conservation issues.

3.2 Resource Development Conservation Issues

Each specific resource development project generates its own conservation issues which go beyond the scope of this paper. At a more conceptual level it is possible to identify generic types of issues that are likely to be of concern with respect to Canada's northern waters, and these will be summarized briefly. The vast majority of todays conservation issues in the Arctic are related to hydrocarbon exploration and development projects, but other projects also can be of concern as highlighted by the first two issues below:

1. Environmental Impact of Hydro Projects. Construction of hydro dams on the northward flowing rivers of the Soviet Union and Canada could affect the climate of the Arctic Ocean. The proposed Liard River dam could have a significant impact on the Mackenzie Delta and the Beaufort Sea by reducing and delaying the spring flood, with the possibility of decreasing the productivity of the marine/estuarine ecosystems in the Western Arctic.
2. Deleterious Deposits from Mining Projects. Lead-zinc mines, such as at Nanisivik and Polaris, and uranium mines, such as at Baker Lake, may result in the deposition of deleterious substances in the Arctic marine environment. These may be toxic to marine organisms, and they tend to bio-accumulate in marine mammals and man through the food chain.
3. Oil Under the Ice. Oilspills in ice-covered waters are

difficult to clean up with present technology. Blowouts may be impossible to cap until the year after they occur. Oil in the cold Arctic environment will persist for a very long period of time. The impact on marine ecosystems could be serious.

4. Pollution of Polynyas and Shore leads. The productivity of marine ecosystems is greatly enhanced at the ice-edges of polynyas and shore leads. Marine related birds and marine mammals concentrate in these areas at certain times of the year, making them highly vulnerable to oil pollution.
5. Protection of Environmentally Significant Areas. Critical areas of Arctic marine habitat have never been identified on a systematic basis. There are no regulations to ensure that hydrocarbon development projects will avoid environmentally significant areas, and no programs in place to protect them.
6. Hydrocarbon Facilities Siting. The siting of major hydrocarbon facilities such as deepwater ports and supply bases can have significant impacts on the environment. The recent debate over Gulf Canada's application for a land-use permit to build a deepwater port at Stokes Point is an obvious example of this issue. The lack of a facilities site selection process or a regional planning process exacerbates the problem.
7. Artificial Islands, Dredging, Quarrying. Dredging and quarrying of construction materials, dredging of harbour channels, and the construction of artificial islands using dredged materials can impact on marine life through direct disturbance or siltation. The presence of numerous artificial islands may alter the ice regime and change the location of the landfast

ice edge.

8. Cumulative Impacts on Renewable Resources. The wide range of oil and gas activities and facilities associated with exploration and development may result in cumulative impacts which will diminish the supply of renewable resources. This may be of crucial importance to the Inuit who rely on renewable resources, particularly marine mammals, for sustenance and to support their traditional lifestyle.

3.3 Transportation Conservation Issues

As a consequence of non-renewable resource development projects the product ultimately must be moved to market. Whereas in the past Arctic marine transportation has been restricted to a short summer season, there now is the very real possibility that the next decade will see the Northwest Passage and other Arctic waters being used on a year-round basis by icebreaking supertankers. Possibilities include: the Arctic Pilot Project; transportation of Beaufort Sea oil and gas to the east coast; transportation of Alaska north slope oil to the east coast; and the development of a Japanese tanker route to the North Atlantic. The prospect of numerous transits of the Northwest Passage by these vessels raises a number of environmental issues.

1. Risk of Tanker Accident. Risk analyses for various types of tanker accidents, and the potential impacts of oil and LNG on the environment, are the subjects of considerable debate. A major accident at the wrong place and the wrong time would have serious consequences. Who decides if the risk is acceptable?
2. Route Selection. Is there sufficient flexibility in route selection and/or the timing of transits to avoid

environmentally sensitive areas at particular times of the year?

3. Impact of Noise on Marine Mammals. The powerful engines of the tankers, and the smashing of thick sheets of ice, will introduce a lot of noise to the marine environment. The Inuit are concerned that it may impair the ability of marine mammals to communicate with each other and ultimately drive them away from the area.

4. Impact of Ships' tracks on the Inuit. In the winter months each transit will leave a rough ice rubble which will refreeze quickly in a thicker and rougher formation, so that after several transits the tankers will shift to a new track. The rough tracks will be difficult for Inuit hunters to traverse on snowmobiles. Numerous side-by-side thick tracks may change the location of ice-edges and delay break-up. In the early summer ships' tracks through landfast ice will not refreeze, also causing difficulties for Inuit hunters.

5. Direct Collisions with Denning Seals. Ringed Seals have their maternity dens in the landfast ice area. Some females and pups inevitably will receive direct hits from tankers while in maternity dens, and the Inuit are concerned that the numerous ships tracks will result in a significant impact on populations along the Passage.

6. Marine Mammals in Leads and Polynyas. The tankers may wish to utilize shore leads and open water areas to increase their efficiency. Marine mammals concentrate in these areas, and they may also be attracted to the open water in ships tracks.

This will increase the vulnerability of marine mammals to ship generated pollution, and it will increased the risk of tanker-mammal collisions.

7. International Conservation Issues. The impact of noise and tanker pollution on marine mammals from Northwest Passage traffic have been identified as international issues by the Inuit of Greenland and Alaska.

3.4 The Policy Vacuum

A key problem in addressing conservation issues in Canada's northern waters is the policy vacuum that exists north of 60°. The Government of Canada, rather than formulating clear policies regarding economic, social and environmental matters, has found it expedient to keep all its options open by not formulating a specific northern policy. The lack of government policies led to a predominance of industrial interests in the early 1970's and to the later substitution of public inquiries for policy formulation. As the pace of development activities increases in the North, the lack of policy direction increases the social and environmental risks.

It is true that elements of government policy do exist, but they fail to give clear direction regarding priorities between economic, social and environmental interests. The 1972 policy statement Canada's North 1970-1980 initially appeared to have a social-environmental bias by saying that "People, resources and environment are the main elements in any strategy for northern development . . . the needs of the people in the North are more important than resource development and . . . the maintenance of ecological balance is essential."[2] However, the energy crisis resulted in the 1976 announcement of An Energy Strategy for Canada and the

"need-to-know" policy calling for accelerated exploration to delimit hydrocarbon resources. The National Energy Program, announced in 1980 and 1982, reaffirmed the need-to-know policy while stating an objective for the North to "achieve resource development at a rate in a manner compatible with a delicate social and environmental balance."[3]

The result is a "balancing act" policy. In the words of the Hon. John Munro during parliamentary debate on The Canada Oil and Gas Act "we must strive to achieve balance in development; balance between renewable and non-renewable resource development; balance between conventional wage employment activities and those that support the traditional native economy; balance between externally generated development and that from within; balance between using the land and resources and conserving them; and balance between protecting the environment and developing the natural resources available to us."[4] Unfortunately the balancing act policy gives little sense of direction or priority when considering issues or options.

The policy vacuum has been identified as a critical problem for the North by many people. During the Lancaster Sound Regional Study the chairman of the public review phase, Peter Jacobs, wrote to the Hon. John Munro that "The first issue is the clear need for a national policy across all departmental sectors of government for Canada's high Arctic. The public express an urgent need for integrated national policies with respect to energy, transportation, conservation and development of the high Arctic."[5] In its recent report Marching to the Beat of the Same Drum the Special Committee of the Senate on the Northern Pipeline raked the Government over the coals for its lack of policy and planning direction, pointed out the consequences for the environment and the people of the North, and firmly recommended that policy and planning measures be formulated without delay.[6]

3.5 Marine Habitat Protection

Arctic marine habitat issues, as referred to in this context, are a subset of Arctic marine conservation issues. The marine conservation issues deal with generic types of developments and the impacts they may have on the overall quality of the Arctic marine environment and on large global and regional ecosystems. The marine habitat issues deal with specific habitats and closely related ecosystems that may be impacted by pollution hazards or development activities from specific projects or groups of projects. These concerns extend to marine fish, marine mammals, seabirds and shorebirds, and to the habitat and life support systems necessary to sustain them on a continuing basis.

Offshore hydrocarbon development projects, such as those presently underway in the Beaufort Sea and the Arctic Islands, include the following marine habitat concerns: the potential effects of the release of drilling fluids containing heavy metals into the marine environment; the release of crude or refined oil, through chronic releases, blow-outs or accidents, into the marine environment; the effects of dredging on specific areas of productive habitat; seismic activities on fast-ice and in open water areas, particularly activities utilizing explosive techniques; underwater noise associated with industrial activities in general and with large, powerful tankers in particular - and the effects on marine mammals; year-round ice-breaking traffic which may affect marine mammals directly (a particular concern for ringed seals) through crushing, and indirectly through noise and disturbance, and could lead to major changes in the habitat available to marine mammals by altering ice-edges and the stability of large ice sheets; the great many activities associated with a large hydrocarbon project, and the physical presence of man's structures, equipment,

servicing and supply vehicles which create a significant level of disturbance; and the cumulative effects of separate projects and activities which may have a combined impact on marine habitat far greater than that identified through project specific studies.

According to Dr. M.J. Dunbar, "Both the presence and absence of sea ice in the north have special biological significance. Sea ice supports a surprisingly intense primary production within the ice itself, consisting primarily of diatoms; this forms the basis for the maintenance of an important ecosystem. Ice edges are regions of special biological productivity. Ice provides a solid substrate used by certain mammals. Ice fosters upwelling, with all its significance in terms of production and transport. On the other side of the coin (absence of ice in winter) polynyas and other open water provide refugia for some sea mammals in winter and for migrant seabirds in spring and fall."[8] Polynyas may play a particularly important role in providing habitat for marine mammals and seabirds, which could be critical for the survival of some populations. These same polynyas appear highly susceptible to disturbance and pollution from hydrocarbon developments and year-round shipping activities.[9]

The basic problem is best described by Douglas Pimlott who explained that "In Arctic waters, polar bears, marine mammals, waterfowl, seabirds, loons and shorebirds are the animals which could be most seriously affected by minor or major oil spills. The behaviour of most of these animals endangers them when they come in contact with intensive human activities. They are all very mobile, and many species concentrate in large numbers in particular areas or at particular times; they are highly vulnerable to oil spilled at or carried by currents to these areas".[10]

Perhaps the most immediate problem in arctic marine habitat protec-

tion is the inadequate information base on fish, marine mammals, and seabirds. Although the information base is better for some areas than for others, there is an inadequate understanding of basic biology, numbers and distributional patterns, and habitat dependencies. Although the types of impacts of development projects are reasonably predictable, the actual impacts on marine habitat in a specific area require specific knowledge about that habitat and its use by marine life. Therefore, before DFO can assess how to protect habitat, an improved capability to identify important, sensitive and vulnerable arctic marine habitat is required. This could include: research and data gathering on the biology and distributional patterns of fish, marine mammals, and seabirds; research on the sensitivity of habitat types to development activities; an assessment of the vulnerability of specific habitats to proposed projects; and the mapping of important habitat that is both sensitive and vulnerable.

Finally, measures required to protect arctic marine habitat must be addressed, such as:

(a) through planning activities designed to reduce potential damage or disturbance;

(b) through proferring protective status on important areas by establishing them as national parks or marine sanctuaries;

(c) through the adoption and enforcement of regulations for development activities, designed to protect marine habitat;

(d) through Departmental opposition to specific projects that would have an unacceptable impact on arctic marine habitat.

(e) through research.

While DFO is involved in all of the above activities, the pace of Arctic developments creates a real need to increase the level of effort.

The complication is that DFO does not have a published policy on Arctic marine habitat protection. However, a draft policy on fish habitat management which includes protection, is now available for public review and discussion. This should culminate in an approved policy statement in 1984 which will have application in the Arctic.[11] At the same time the Department requires a concerted effort to improve its inadequate information base on arctic marine habitat.

3.6 Renewable Resource Harvesting

The level of existing renewable resource harvesting, and the potential for new or increased renewable resource harvesting developments, also are issues for arctic marine conservation. The Inuit use some terrestrial mammals in their 'country food' diet, but they are primarily marine resource harvesters.[12] They are heavily dependent on country food, which contributes the estimated equivalent of several thousand dollars of income per family per year,[13] and look on the entrenchment of traditional hunting rights as a necessary part of native land claims negotiations.

The Canadian courts generally have held that whatever aboriginal rights native people may have to use renewable resources, that right does not include the authority to regulate the harvest. That authority rests with the Crown and, in the case of marine renewable resources, with DFO. However, despite the present regulatory regime the Inuit undoubtedly will press for an increased role in the regulatory process, and may be successful in altering the status quo through native land claims negotiations. The James Bay and Northern Quebec Agreement guaranteed special harvest rights for natives, and established a Co-ordinating Committee with equal representatives from the Cree, Inuit, Canada and Quebec as a

consultative body to supervise and regulate the regime.[14]

The 1978 Inuvialuit Agreement-in-Principle would give the Inuvialuit priority in the harvest of marine mammals, guaranteed to current harvest levels, and establish consultative research and management institutions.[15] All settlement proposals put forward to date by Natives have included special rights to harvest and manage fish and wildlife. Some Inuit look on renewable resource development as a preferred future for their people, rather than a non-renewable resource economy. They argue that a strengthened renewable resource economy would give their people the option of choosing between the traditional lifestyle and wage employment (or some combination of the two) while maintaining their cultural heritage. They argue that this would eliminate the "boom-bust" effect of non-renewable resource projects and stabilize their communities. They are interested in developing tourism activities based on the natural attributes of the North and its wildlife resources. They also believe that the renewable resources of the North can support higher levels of harvest than at present, to provide cash incomes as well as subsistence country-food.[16]

The Inuit are not alone in this thinking. A research team from the University of Waterloo, under the direction of Prof. Robbie Keith, recently developed a 'renewable resource economy' scenario for the Lancaster Sound Region.[17] The goal would be to achieve a viable, stable economy through the development of renewable resources and diversification of their uses. Hunting, fishing and trapping activities would continue, but under a wider based territorial sustained yield management strategy, where resources are hunted for both food consumption and economic gain. Secondary activities would be developed to use the products and by-products of the hunt for clothing and footwear as well as food. Climbing, sightseeing and tourism-

related fishing and hunting would be encouraged. The need for Inuit involvement in management and preservation of the ecosystem and the renewable resources was stressed.

There are a number of issues with respect to the use and management of renewable resources in the North. Perhaps the focal one is - are the Native people good conservationists? Some of the Native people contend that they are conservationists by nature and cannot over-harvest the resource, a point of view that might have some validity if it were not for modern weapons and transportation.[18] Indeed there have been all too many incidents in recent years where a minority of Native hunters have abused their rights and needlessly slaughtered wildlife, or who have taken walrus and narwhal for the ivory and wasted the meat.[19] These facts lead other Canadians to question the conservation ethics of Native people, and to look on native hunting and fishing as the unmanageable component of renewable resource management in the North. Kenneth Brynaert of the Canadian Wildlife Federation recently asserted that native people are a threat to wildlife, and vowed to go to court if future land claim agreements grant native people exclusive hunting or fishing rights or give them authority for wildlife management.[20]

For arctic marine renewable resources the level of sustainable harvest also is an important issue. DFO often has to base its resource management decisions on inadequate biological data, and the Inuit frequently do not believe what the scientists tell them and fail to see the sense in management strategies. The scientists and the Inuit each have different kinds of knowledge which go mutually unappreciated.[21] The immediacy of this issue is especially important for endangered species such as the bowhead whale. The scientists, the Inuit the the government people

promoting tourism-related renewable resource projects have little or no common understanding of potential harvest levels with a sustainable management strategy.

The most controversial issue for the coming years is - what role should the Inuit play in the management of arctic marine renewable resources? Although present regulatory authority rests with DFO, the handwriting is on the wall (and in the drafts of land claims agreements) that a change is going to come. The exact nature of the change, and how DFO should react in the meantime, is not at all clear. Intermediate stages of sharing resource management responsibilities with the Inuit through consultative mechanisms and educational programs would appear worthy of consideration.

It is interesting to note that Peter Usher, in what may well be the best thought out publication on this issue, says that the solution lies in a melding of Inuit customary law with the exercise of state authority.[22] He says that native groups have developed an extensive body of customary law on the use and allocation of resources, with the fundamental feature that each group had a distinct and recognized geographical territory. Barriers to hunting or fishing by outsiders helped reduce overharvesting, and the people who were directly dependent on the resources were effective resource managers. Usher believes not only that this body of customary law retains relevance today, but that it is a necessary component of any legitimate system of resource management and enforcement in the eyes of the native people. If conservationists and wildlife managers supported the customary law process, there could be the following benefits: (Quoted from Usher)

(a) "the process could provide a forum for native

people to consider, without the pressures and polarization generated by some crisis, the very real ways in which the demands they currently place on wildlife resources are not the same as those of their forefathers."

(b) "it could serve to overcome the seeming inevitability that once hunters participate in a management system, they cannot do so on their own terms but must learn the jargon and procedures of both science and bureaucracy. What non-natives commonly understand as 'traditional knowledge' would consist not simply of a set of observations about animal behaviour, but also of rules for human conduct."

(c) "an effective system of customary law and enforcement would both simplify the tasks of 'official' wildlife managers and enforcement officers, and make those occupations more attractive to native people, since they would be implementing their own system, or something reasonably congruent with it, instead of an alien one. A management system which hunters can understand, support and even demand will require a minimum of enforcement and achieve a maximum of results."

(d) "it could provide a forum in which scientists and hunters could overcome at least some of

their misunderstandings with respect to the facts, if not what to do with them."

(e) "it could provide the means for native people to regulate among themselves the geographical distribution of their hunting effort, chiefly by allocating group or individual rights to specific territories. This would not eliminate the rights of urban natives, but it could provide a means of regulating their access consistent with native traditions."

CHAPTER 4

NORTHERN PLANNING AND CONSERVATION INITIATIVES

4.1 Introduction

At the present time there is no comprehensive framework for planning or for conservation in the North. This is true even for the terrestrial regime, as well as for the Arctic Marine environment. However there are a number of existing vehicles and proposed initiatives at various stages of development which, although not expressly aimed at marine conservation issues, may make effective contributions to marine conservation objectives. Although many of these initiatives are led by other departments, particularly DIAND, they may present DFO with opportunities for cooperation and program coordination which should not be ignored. This chapter presents a review of the history and present status of several of these initiatives.

4.2 Northern Land Use Planning

DIAND traditionally has taken an ad hoc approach to northern planning based on the assumption that all resource uses, if properly managed, can be accommodated on federal lands in the Territories. As non-renewable resource development activities increased during the 1970's, placing additional pressures on the northern environment and renewable resources, the validity of that assumption became questionable. Public interest groups began to criticize DIAND for not having a regional planning policy and process in place so that new development proposals could be placed within an established framework.

The Berger Commission placed strong emphasis on the need for a regional planning approach to deal with the impact of non-renewable

resource developments on native peoples, and for a northern conservation strategy to protect important natural areas and renewable resources. The Canadian Arctic Resources Committee (CARC) has been highly critical of DIAND for not having a planning process to guide northern development, and both CARC and the Canadian Nature Federation have pressed the need for a northern conservation strategy. The Northern and Southern Workshops of the Lancaster Sound Study reached similar conclusions. Through comprehensive land claims negotiations ITC, COPE, CYI and the Dene have all demanded the establishment of some form of regional planning process.

In July of 1981 Indian and Northern Affairs Minister John Munro announced that the federal government had approved a new policy on comprehensive land use planning. Through this policy DIAND would be responsible for establishing a formal land-use planning system to improve the management of Northern resources and to resolve conflicts between different resource users. It is important to note that, in the context of Northern Land Use Planning, "land" includes: "those offshore areas adjacent to the coast of Yukon and Northwest Territories and extending throughout the natural prolongation of the land territory of these Territories to the outer edge of the continental margin or to a distance of two hundred nautical miles from the baselines from which the breadth of the territorial sea of the Territories is measured, whichever is greater."[1] For areas such as the Beaufort Sea and Lancaster Sound, "land-use" planning clearly includes coastal zone and marine planning.

Cabinet approval of the new policy was based upon a Discussion Paper on Northern Land Use Planning[2] which outlined an approach to the management of land use in the North for purposes of defining a northern land use planning policy. It contained a background and rationale for the

new initiative, plus 'example' policy statements, program objectives, planning structures, and planning regions. Since Cabinet approval was based on a Discussion Paper rather than a specific program proposal, it remained questionable how concepts in the Discussion Paper actually would be implemented.

The ensuing 2 1/2 years have been a frustrating period for DIAND officials charged with implementation of northern land use planning. The Inuit Tapirisat of Canada (ITC) acknowledged that an innovative planning approach for the North was "desperately needed" while pointing out that Inuit representatives had not been consulted on the new policy — and could not support its implementation without knowing more about it, and how it might impact on the Nunavut aboriginal claim.[3] Both territorial governments expressed reservations about the planning process and the role that northerners would play in it. DIAND responded in October 1982 with a 160 page draft "Land Use Planning in Northern Canada" document.[4]

At this writing, Janary 1984, the promise of the Northern Land Use Planning program remains unfulfiled. DIAND has held consultations with native groups and the territorial governments, and progress reportedly has been made in negotiating an acceptable planning process. However, DIAND now must go back to Cabinet on a revised policy and program, and the entire program is being re-examined by the central funding agencies.

4.3 A Comprehensive Conservation Strategy

The Government of Canada does not have a comprehensive conservation strategy for the North. This is a frustrating fact for environmentally concerned Canadians, and for public interest groups such as CARC and CNF, who feel that the lack of a conservation strategy leaves the northern

environment and resources vulnerable to future developments. In the most open public inquiry ever held on northern development issues, Justice Thomas Berger recommended that:

(a) "As part of comprehensive planning in Canada's North, the federal government should develop a northern conservation strategy to protect areas of natural or cultural significance. This strategy should comprise inventories of natural and cultural resources, identification of unique and representative areas, and withdrawal and protection of such areas under appropriate legislation"; and

(b) "A Northern conservation strategy should be implemented by distinguishing the different types of conservation areas and matching the degree of protection to the nature and importance of the resource. Such conservation areas may include wilderness parks, national parks, national marine parks, national landmarks, wildlife areas, wild rivers, historic water routes, historic land trials, ecological reserves, recreation areas, and archaeological and historic sites."[5]

Despite the logic of Berger's recommendations, and the support for these or similar recommendations in subsequent fora such as the Lancaster Sound Regional Study, a comprehensive conservation strategy for the North has not been developed. Instead we see a confusing set of areas that offer

varying degrees of protection to certain sites and resources, while many other important sites and resources go unprotected. Panel 9 the the Canadian Committee for the International Biological Programme identified 71 proposed ecological sites in the Arctic in its 1975 report,[6] but in the intervening years only one site has been given even temporary protection. As well, it must be pointed out tha Panel 9 was looking at terrestrial sites. Although some of the proposed sites do include marine components, the bottom line is that the need for arctic marine ecological sites has never been addressed.

There are some positive indications that Canada may be preparing to develop a northern conservation strategy. As pointed out in Chapter 1, Canada has adopted the World Conservation Strategy, and the subsequent Federal Review recommended that: "DIAND and Environment Canada, in co-operation with the Territorial governments, encourage and support the development of a management plan for the Canadian North which integrates conservation of living resources with their development and the development of non-renewable resources; this should be linked with the northern land use planning initiative recently taken by DIAND and with the draft DOE Policy for the North".[7] Related to this is Priotity Requirement 9 which calls for "Establishment of a comprehensive network of protected areas, securing the habitats of threatened, unique and other important species, unique ecosystems, and representative samples of ecosystem types".[8] Priotity National Action 10 stresses the need for "Establishment of new organizations or of special measures to co-ordinate existing ones for the comprehensive management of marine living resources."[9]

Environment Canada has recently released a discussion paper entitled "Environment Canada and the North"[10] which sets out Departmental

perceptions, roles and policies concerning the North and its development. It puts forward the objective of promoting "the establishment of a comprehensive network of protected areas in the North to provide adequate protection and management for areas and sites of significance in the preservation of Canada's natural and cultural heritage ...."[11] One strategy for achievement of this objective is the completion of the national park systems in the North, and the paper states that "at least three national marine parks are required to represent adequately the North's natural regions."[12] Other strategies include: evaluating and, if necessary, recommending legislation to establish a special ecological reserves program in the North; establishing and maintaining a planning framework for conservation areas; and cooperating with other countires in the establishment of protected areas for critically important species and ecosystems. DOE recognizes that effective implementation of these strategies requires consultation and cooperation with other departments and the territorial governments. The Parks Canada division of DOE has recently circulated a draft policy document on National Marine Parks[13], and the eventual establishment of marine parks in the Arctic could support DFO Arctic marine conservation objectives in many ways.

In October 1982 DIAND produced a draft discussion paper on "A Comprehensive Conservation Policy and Strategy for the Northwest Territories and Yukon."[14] The discussion paper, and the early 1983 Whitehorse Conservation Workshop on it, represent DIAND's commitment to develop the elements of a conservation policy and an action plan for its implementation. While the discussion paper does not focus on Arctic marine conservation, it is clear that it is to be included as one component of the comprehensive policy and strategy — thereby providing DFO with an opportunity to

implement some of its own objectives. Unfortunately, since this is a draft document, there is no certainty DIAND's initiatives will result in the development of a conservation strategy in the near future. In the meantime environmentally significant marine areas have no protective status. However, a Task Force on Northern Conservation has been established to provide the DIAND Minister with recommendations on the northern conservation policy and implementation strategy, and it is expected to submit its report in May, 1984.

4.4 Lancaster Sound Regional Study

A 1973 application by Norlands Petroleum Ltd. to drill an exploratory well at the Dundas K-56 site in Lancaster Sound resulted in considerable concern about potential environmental impacts. Viewed as a virtual Arctic oasis supporting unusually high biological productivity, Lancaster Sound was cited as the region where: at least 85% of North America's Narwhal population summers or migrates through; one-third or more of North America's white whales migrate through; one third of the world's population of Greater Snow Geese breed; over 50% of Canada's entire Eastern Arctic population of marine-associated birds migrate, nest or feed; and where zooplankton biomass, phytoplankton diversity and the phytoplankton standing crop is unusually high.[15] Its status as a major wildlife waterway, staging centre and breeding area, and the potential impact of oil pollution from offshore exploratory drilling, warranted an environmental impact assessment.

The proposed project was referred by DIAND to the Federal Environmental Assessment and Review Office, and an EARP Panel was established. In its 1979 Report[16] the Panel recommended against the drilling after

concluding that a meaningful assessment of potential impacts could not be made in isolation from boarder issues relating to the biological uniqueness and socio-economic considerations of the area. The Panel recommended that the Government initiate a comprehensive review, including national and regional public imput, of the resource use issues in order to determine the best use of the Sound. The DIAND Minister accepted the Panel's recommendations and, in July 1979, established the Lancaster Sound Regional Study to prepare policy options in the form of a "green paper".

The Lancaster Sound Regional Study had two parallel roles: the preparation of a Green Paper to stimulate informed discussion on future use options for the region's marine and land areas; and the provision of a foundation and framework for a comprehensive regional planning process. DIAND organized the study in collaboration with DOE, DFO, EMR, DOT, EA and GNWT — and established a senior Steering Committee to provide general direction, and a Working Group. There were no Inuit representatives or residents of the region on the Steering Committee or the Working Group.

The Study produced a Draft Green Paper[17] in December 1980, held community hearings and Northern and Southern Workshops to obtain public inputs, and produced a final Green Paper[18] in 1982. The final phase of public consultation on the Green Paper was held during the summer of 1983. The final Green Paper presents six options for the future use of the region which run the gamut from strict environmental protection to concerted economic development. It places options for a regional planning process within the context of the framework of the Northern Land Use Planning program. Based on the Green Paper and public reaction to it, the DIAND Minister may soon have to make a choice between implementing a comprehensive regional planning process or announcing his own decision on the Green

Paper options.

The report[19] submitted by Peter Jacobs as chairman of the public review phase posits a strong case for the former alternative. His covering letter of transmittal to the Hon. John Munro said that: "An important and potentially significant initiative has been launched by your department with respect to the national concern for Canada's high Arctic. The Lancaster Sound Regional Study and the draft green paper derived from it are the first attempts by government to initiate a process of regional planning in the North."[20] Jacobs went on to cite the clear need for integrated national policies, the resolution of native land claims, and the virtually unanimous agreement on the urgent need to establish a regional planning process. Throughout the Study the importance of the marine resources, and the need for Arctic marine conservation initiatives were highlighted. "One of the major concerns identified by the Lancaster Sound Regional Study pertains to the environment and its continued use by the Inuit. The Sound's biological productivity is of global significance and the area will require comprehensive protection measures."[21]

CHAPTER 5

DFO RESPONSIBILITIES AND OPPORTUNITIES

5.1 DFO Priority Area Requirements

The general departmental responsibilities for arctic marine conservation, and the Department's northern objectives, were reviewed in section 2.3. The accelerated development of major projects in the North places great pressure on DFO resources and raises a question as to how capable the department is of discharging those responsibilities. A recent review[1] of key requirements related to Beaufort Sea production identified the following priorities:

(a) Adequate charts must be available before the tanker traffic begins. These are statutory requirements under the Canada Shipping Act.

(b) Fundamental knowledge of Arctic ecosystems as a basis for impact prediction and oilspill contingency planning. All Arctic hearings to date on impact as assessment have been unable to resolve many impact issues because of this fundamental deficiency, and in each case government has been called upon urgently to address these scientific issues more actively.

(c) Oceanographic/ice studies are required to support development and implementation of Arctic marine services (e.g. ice forecasting) in order to promote safe and efficient shipping.

(d) Site specific ecosystems studies must be implemented in the Beaufort Sea, in areas where the

permanent structures will be located and production operations will take place. Regional planning requires this information and predictive capability as well.

(e) Fisheries and marine mammal information and increased enforcement are required to meet statutory requirements under the Fisheries Act.

Three of the above priority areas relate to arctic marine conservation, with specific projects proposed on: effects of ship noise on Arctic marine mammals; identification and characterization of critical habitats; environmental contaminants in Arctic marine biota; conservation and protection; Arctic Cod spawning; co-ordination of fisheries habitat research; rates and processes of primary production of phytoplankton; the significance of macrophyte production system in the Arctic; trophodynamics of epontic biota; benthic-pelagic coupling; geographical review of production areas; hydrocarbon seeps; polynuclear aromatic hydrocarbons; eastern Arctic physical oceanography; numerical modelling of oceanic circulation; Beaufort Sea shelf dynamics; Beaufort Sea storm surges; Beaufort Sea biological oceanography; chemical oceanography of the Beaufort Sea and Amundsen Gulf.

The lists of priorities and proposed projects were drawn up with respect to DFO responsibilities for Beaufort Sea production, but they appear to be a fair representation of the extensive types of activities required wherever hydrocarbon production takes place in the Arctic. The entire Northwest Passage and the Sverdrup Basin also are priority areas, and other areas which may soon be accorded a high priority include Lancaster Sound, Jones Sound, Baffin Bay, Davis Strait and Hudson Bay.

Although the manpower and financial resources that are required to undertake these activities is immense, the Department has a clear responsibility to ensure that the arctic marine environment is protected and preserved as well as possible based on the best available scientific knowledge. Beyond hydrocarbon activities there are a host of DFO responsibilities related to renewable resource management and harvesting, marine park management, circumpolar and international research on ecosystems and ocean climate, hydrographic surveys, and monitoring.

5.2 Planning Responsibilities

DFO, in order to fulfill its obligation to coordinate the policies and programs of the Government of Canada respecting oceans, has a responsibility to participate in all federal planning activities for the North. In so doing the Department may have to get more involved in regional planning issues, and may have to take a more proactive role in planning for arctic marine conservation.

DFO is, and has been, involved in a number of planning activities in the North. As part of the Environmental Assessment and Review Process DFO has participated in the review of Environmental Impact Statements for Davis Strait, Lancaster Sound, the Arctic Pilot Project, and the Beaufort Sea, and an Initial Environmental Assessment for Baffin Bay. Although not primarily a planning exercise, the preparation of an EIS certainly encompasses planning components and DFO has a responsibility to continue its participation. The Department has been actively involved in the Lancaster Sound Regional Study and is committed to a continuing role in public discussions on the use and management of the Sound. For Lancaster Sound the Department has stated that "it is our belief that the Regional Study

must lead to the establishment of a management framework involving the participation of the various interests in Lancaster Sound and that this framework must incorporate a continuing planning process".[2]

DFO discharges many of its policy and planning responsibilities for arctic marine conservation through a variety of mechanisms, including: the now defunct Beaufort Sea Office and Steering Committee; the Arctic Waters Advisory Committee; the Senior Policy Committee, Northern Resource Development; the Interdepartmental Environmental Review Committee; the Resource Management Environmental Committee; the Land Use Advisory Committee; the Environmental Advisory Committee on Arctic Marine Transportation; the Arctic Regional Ocean Dumping Advisory Committee; the Regional Screening and Coordinating Committee; and the Regional Environmental Review Committees. This extensive involvement, and commitment, belies the fact the DFO tends to participate in a reactive fashion as a science advisor — rather than taking a proactive stance on planning requirements for arctic marine conservation. The lack of well developed policies and programs, combined with the inadequate information base on habitat and marine resources, hamper the effectiveness of Departmental officials in these quasi-planning fora.

It can be argued that DFO takes too restricted a view of its responsibilities for arctic marine conservation, frequently focusing on its management responsibilities for harvestable species rather than the ecosystems approach embodied in the World Conservation Strategy. The broader concerns for the protection and preservation of the arctic marine environment, spelled out in Article 234 of the Law of the Sea Treaty, seldom receive high priority in Departmental policies and programs. Taking a proactive approach to DFO responsibilities should start with an examination

of Canada's responsibilities for arctic marine conservation.

As the lead federal agency for arctic marine policies and programs, DFO's first responsibility should be to ensure that national commitments are met. DFO has a responsibillity, perhaps in conjunction with DOE, to play a lead role on policies and programs for: arctic marine baseline studies; arctic marine ecosystems research; a comprehensive arctic marine conservation stratety; arctic marine habitat protection; arctic marine resource harvesting; the quality of the arctic marine environment; and implementation and enforcement measures. This is not to say that DFO has the responsibility to do all these things, but to ensure they are done on behalf of the federal government.

With the DIAND initiative for Northern Land Use Planning, which perhaps should be called regional planning, there may be an opportunity to take care of some DFO responsibilities through that planning process. Certainly DFO has a responsibility to participate in the planning process and to provide inputs at different levels in the regional planning structure.

Northern Land Use Planning, if properly implemented, could provide DFO with some interesting opportunities for achieving its conservation objectives, including: a vehicle for switching from a reactive to a proactive role on Arctic marine conservation issues; a stimulus for formulating policies on Arctic marine conservation issues and integrating them with other federal policies; assuming the lead agency role with respect to other federal departments on oceans policies and programs; the formulation of a comprehensive marine conservation strategy for the North; an effective delivery mechanism to utilize DFO scientific knowledge of Arctic marine systems; and additional funding for gathering marine baseline information and for the study and analysis of marine planning issues.

5.3 Summary and Recommendations

The Arctic marine environment and its renewable resources are under increasing pressure from major non-renewable resource projects that are in place or are being planned for the North. Although it is practically self evident that the situation requires a strong lead agency with a mandate to protect and conserve these national resources, the reality unfortunately is otherwise. DIAND, DOE and DFO have a confusing overlap in their general mandates, and there is no clear answer to the question: Which department has the Mandate to co-ordinate federal policies and programs for the Arctic marine environment?

DFO does have broad responsibilities for Arctic marine conservation, for fish habitat management, for marine science and surveys, and for co-ordination of federal policies and programs for oceans. The Department has become heavily involved in Northern adivsory committees, EARP panels, planning programs, and other activities regarding development projects and related marine conservation issues, but primarily in a reactive role. The time has come for DFO to take a more proactive role as the lead agency with Arctic marine conservation responsibilities, to ensure that Canada's commitments emanating from the Law of the Sea Treaty and the World Conservation Strategy are implemented.

DIAND initiatives for a Northern Land Use Planning program and a Comprehensive Conservation Policy and Strategy, and DOE initiatives for Arctic National Marine Parks and proposed policies and strategies for the northern environment may provide DFO with excellent opportunities for implementing its responsibilities. However, DFO should neither rely on the initiatives of other agencies nor sit back waiting for them to occur, but should proactively take the lead in ensuring that Arctic marine

conservation policies, strategies and implementation mechanisms are developed — and that marine renewable resources and habitats are properly protected and conserved.

Recommendation #1: It is recommended that DFO propose the establishment of an Arctic Marine Policy Council.

The purpose of the Arctic Marine Policy Council would be to develop, and make recommendations to appropriate ministers and to Cabinet on, integrated policies on all aspects of the use and management of Canada's Arctic waters. Membership on the Council should reflect the cross-section of Arctic marine interests and expertise, and should be predominantly non civil servants. One role of the Council should be to promote the development of compatible policies and program objectives by different governments, departments and agencies.

Recommendation #2: It is recommended that DFO assume the lead role in developing a comprehensive Arctic marine conservation policy and strategy.

The comprehensive policy should include the quality of the Arctic marine environment, ecosystem conservation, habitat protection, renewable resource conservation and management, renewable resource harvesting, and scientific knowledge. The comprehensive policy should be developed in collaboration with the Inuit, the territorial governments, DIAND and DOE — but DFO should take a proactive lead role. This proposed initiative should make a substantive contribution to implementation of a comprehensive (terrestrial and marine) conservation policy for the North.

Recommendation #3: It is recommended that DFO identify, and take necessary steps to protect, important marine environmentally sensitive areas.

This recommendation should be implemented systematically, using selection criteria to identify and rank marine environmentally sensitive areas and to assess their vulnerability to impacts from human activities. Particular attention should be given to the major recurring polynyas and shoreleads which concentrate large biologic populations at certain times of the year -- such as the North Water, Lancaster Sound, and the Cape Bathurst polynya. Consideration should be given to the establishment of marine parks/ reserves or the creation of other protected areas as deemed appropreate. This should be accompanied by a public education program on the importance of these environmentally sensitive areas.

Recommendation #4: It is recommended that DFO support the establishment of an Inuit Marine Affairs Council.

An Inuit Marine Affairs Council would be a useful vehicle for developing and coordinating Inuit policies on marine resources and the use and management of Arctic marine waters, particularly out to the landfast ice edge. The Inuit Marine Affairs Council should have a consultative link with the proposed federal Arctic Marine Policy Council. It should play an advisory role on policy inputs to planning programs affecting Arctic waters and resources, and it should develop proposals for Inuit involvement in Arctic marine management. DFO should atempt to promote implementation of departmental policies, objectives and programs through the Inuit Marine Affairs Council, thereby justifying financial and other resource

support to it.

Recommendation #5: It is recommended that DFO initiate a program for Inuit marine mammal management.

Given the Inuit dependence on marine mammals, their traditional harvesting rights, and the consequences of land claims negotiations for management rights -- DFO should seize the opportunity to initiate a new program for Inuit marine mammal management. This should be based on the recognition that DFO responsibilities for marine mammal management can best be carried out through the cooperation and participation of the users of the resource in the management process.

FOOTNOTES

CHAPTER 2

[1] Bernhardt, J. Peter. "A Schematic Analysis of Vessel Source Pollution: Prescriptive and Enforcement Regimes in the Law of the Sea Conference", (1980), 20 Virginia Journal of International Law, pp. 265-311; and Schneider, Jan "Pollution from Vessels" in Douglas M. Johnston, (ed), The Environmental Law of the Sea (Gland, Switzerland: IUCN, 1981) pp. 203-217.

[2] M'Gonigle, R.M., and Mark W. Zacker. Pollution, Politics and International Law (Berkeley, U. of California Press, 1979) pp. 139, 247 and 280-281.

[3] McDorman, Ted L., Norman G. Letalik, Hal Mills, Douglas M. Johnston and Edgar Gold. The Marine Environment and the Caracas Convention on the Law of the Sea. (Dalhousie University, 1982).

[4] Johnston, Douglas, M. (ed). The Environmental Law of the Sea, (Gland, Switzerland, IUCN, 1981).

[5] World Conservation Strategy: Living Resource Conservation for Sustainable Development (Gland, Switzerland, IUCN, 1980).

[6] Dosman, Edgar, G. "Arctic Seas: Environmental Policy and Natural Resources Development", in O.P. Dwivedi, ed., Resources and the Environment: Policy Perspectives for Canada (Toronto: McClelland and Stewart, 1980), p. 207.

[7] Lucas, A.R., D. MacLeod, R.S. Miller. "Regulation of High Arctic Development", in Marine Transportation and High Arctic Development: Policy Framework and Priorities - Symposium Proceedings (Ottawa: CARC, 1979) pp. 119-122.

[8] Ibid, pp. 122-124.

[9] Ibid, pp. 125-129 and 132-133.

[10] Lucas, Alastair, R. "Regulation of Marine Operations in the Far North", in Canada and the Sea, (1980) Canadian Issues 175. p. 177.

[11] Lucas, MacLeod, Miller, p. 131.

[12] Ibid, pp. 124-126, 133-134, and 143.

[13] Fisheries and Oceans. "The Implications of the Beaufort Sea Hydrocarbon Production Proposal to the Department of Fisheries and Oceans," Arctic Offshore Developments Committee Working Paper ARCOD 82-9.

CHAPTER 3

[1] Major Canadian Projects, Major Canadian Opportunities, A Report by the Consultative Task Force on Industrial and Regional Benefits from Major Canadian Projects, Ottawa, 1981, Table 4.1.

[2] DIAND. Canada's North: 1970-1980, Ottawa: Information Canada, 1972.

[3] EMR. The National Energy Program: Update 1982, Ottawa, Supply and Services, 1982.

[4] DIAND Communique, "Notes for Remarks by the Honourable John Munro, Minister of Indian and Northern Affairs in Debate of Bill C-48 in the House of Commons", Monday, October 19, 1981.

[5] Jacobs, Peter. People, Resources and the Environment, Public Review Phase of the Lancaster Sound Regional Study, DIAND, August 1981, p. 3.

[6] Senate of Canada. Marching to the Beat of the Same Drum, Report of the Special Committee on the Northern Pipeline, Queens Printer, March 1983, p. 1.

[7] Davis, R.A. Report of a Workshop on Arctic Marine Mammals, Canadian Technical Report of Fisheries and Aquatic Sciences, No. 1005, May 1981, pp. 3-6.

[8] Dunbar, Max J. "Physical causes and biological significance of Polynyas and other open water in sea ice:, in Polynyas in the Canadian Arctic, Occasional Paper #45, Canadian Wildlife Service, 1981, p. 35.

[9] Stirling, Ian, Holly Cleator, and Thomas G. Smith. "Marine Mammals", in Polynyas in the Canadian Arctic, Occasional Paper #45, Canadian Wildlife Service, 1981, p. 45.

[10] Pimlott, Douglas, Dougald Brown, and Kenneth Sam. Oil Under the Ice, Canadian Arctic Resources Committee, 1976, p. 95.

[11] Fisheries and Oceans. Towards a Fish Habitat Management Policy, Discussion Paper, Supply and Services, Ottawa, FJ23-50/1983E.

[12] Myers, Heather. "The Use of Biological Resources by Certain Arctic and Subarctic Peoples", M. Phil Thesis, Scott Polar Research Institute, 1981, p. 11.

[13] Usher, Peter. "Fair Game?", Nature Canada, Vol. 11, No. 1, 1982, p. 10

[14] Hunt, Constance D. "A Legal Perspective on Natives and Wildlife in Canada", Forth-Fourth North American Wildlife Conference, 1980, p. 590.

[15] Ibid, p. 591.

[16] Dirschl, H.J. (ed) The Lancaster Sound Regional Study: 1980-2000, DIAND, Draft Report, November, 1981, pp. 20, 21.

[17] Atkinson, Edward, Mary Gellatley, Grant McGregor, Chris Mockler, Kevin O'Reilly, Barry Stanton, and Trevor Swerdfager. "Lancaster Sound: Options for the Future and Perspectives on Planning", Department of Man-Environment Studies, U. of Waterloo, May 1981, pp. 10-21.

[18] Finney, G.H. "Some Aspects of the Native Harvest of Wildlife in Canada", Forth-Fourth North American Wildlife Conference, 1980, p. 576.

[19] Usher, p. 10.

[20] The Globe and Mail. "Wildlife group battles special rights for natives", January 6th, 1981, p. 5.

[21] Usher, p. 38.

[22] Ibid, pp 42, 43.

CHAPTER 4

1 DIAND Communique. "Northern Land Use Planning Policy Announced", I-8124, Yellowknife, July 30, 1981.

2 DIAND Discussion Paper. Northern Land Use Planning, 1981.

3 Amagoalik, John. Inuit Tapirisat of Canada letter to Mr. N. Faulkner, dated October 27, 1981.

4 DIAND. Land Use Planning in Northern Canada (Draft), 14 October, 1982.

5 Berger, Thomas. Northern Frontier, Northern Homeland, The Report of the Mackenzie Valley Pipeline Inquiry, Volume Two, 1977, p. 119.

6 Nettleship, David N. and Pauline A. Smith, (eds). Ecological Sites in Northern Canada, Canadian Wildlife Service, 1975.

7 Federal Review: World Conservation Strategy, Ottawa, 1981, p. 62.

8 Ibid, p. 19.

9 Ibid, p. 45.

10 Environment Canada. Environment Canada and the North, Discussion Paper, Ottawa, July 1983.

11 Ibid, p. 29.

12 Ibid, p. 31.

13 Parks Canada. National Marine Parks: Draft Policy, August 1983.

14 DIAND. A Comprehensive Conservation Policy and Strategy for the Northwest Territories and Yukon, draft discussion paper, Northern Environment Directorate, Octogber 1982.

15 Smiley, Brian, and Allen Milne. Offshore Drilling in Lancaster Sound: Possible Envirnmental Hazards, Department of Fisheries and Environment, Sidney, B.C., February, 1978, p. 84.

16 FEARO. Report of the Environmental Assessment Panel: Lancaster Sound Drilling, Report No. 7, Ottawa, 1979.

[17] Dirschl, H.J. (ed). The Lancaster Sound Region: 1980-2000, Draft Green Paper, DIAND, December 1980.

[18] Dirschl, H.J. (ed). The Lancaster Sound Region: 1980-2000, Issues and Options on the Use and Management of the Region, Green Paper, DIAND, January 1982.

[19] Jacobs, Peter. People Resources and the Environment: Perspectives on the Use and Management of the Lancaster Sound Region, Public Review Phase, Lancaster Sound Regional Study, DIAND, August 1981

[20] Ibid, p. 3.

[21] Dirschl (ed). 1982, p. 6.

CHAPTER 5

[1] Department of Fisheries and Oceans. "Program Submission: Arctic Hydrocarbon Development", Beaufort Sea Oil Production, November 1981, 3.2.

[2] Department of Fisheries and Oceans. "Brief Presented to Southern Workshop, Lancaster Sound Regional Study," Carleton U., May 25-27, 1981., p. 2.